

[002] This application claims priority from German Application Serial
No. 103 05 242.9 filed February 8, 2003.

[003] FIELD OF THE INVENTION

[004] The invention relates to a six-gear or seven-gear selector transmission for a motor vehicle according to the preamble of claim 1.

[005] BACKGROUND OF THE INVENTION

[015] ——— The solution of the problem results from the features of the main claim while advantageous developments and improvements can be understood from the sub-claims.

[016] SUMMARY OF THE INVENTION 

[038] BRIEF DESCRIPTION OF THE DRAWINGS

[039] ~~For better understanding of the invention, with the description is~~ ◆
~~enclosed one drawing which shows~~ The invention will now be described, by ◆
way of example, with reference to the accompanying drawings in which: ◆

[043] DETAILED DESCRIPTION OF THE INVENTION 

[055] The second remaining transmission driveable by the input shaft 4 has available in the first place one fixed wheel 37 fastened upon said input shaft 4 and meshing with an idler gear 35 of the fifth gear G5 situated on the first countershaft 5 and with an idler wheel 36 of the seventh gear G7 situated on the second countershaft 6. There further sit on this input shaft 4, one other fixed wheel 11 which is in tooth contact with the idler wheel 7 of the first gear G1 on the first countershaft ~~[[4]]~~ 5, the same as a last fixed wheel 33 which drives an idler wheel 34 of the third gear G3 on the second countershaft 6.

1-27. (CANCELED)

28. (NEW) A six-gear or seven-gear vehicle transmission (1, 30) having at least one of one starting and selector clutch (K1), the input side of which is connected with a drive shaft (2) of a prime mover and the output side (3) with an input shaft (4), two countershafts (5, 6) upon which are rotatably supported gear wheels designed as idler wheels (7, 8, 9, 10, 15, 16, 17, 34, 35, 36), gear wheels designed as fixed wheels (11, 12, 13, 14, 33, 37) non-rotatably situated upon said input shaft (4) and in tooth contact with said idler wheels (7, 8, 9, 10, 15, 16, 17, 34, 35, 36), coupling devices (22, 23, 24, 25, 31, 32) non-rotatably and axially movably supported upon said two countershafts (5, 6) and movable there by means of setting devices, the same as one output gear wheel (18, 19) fastened on the respective countershaft (5, 6) and in tooth contact with one toothing (20) on a differential transmission (21), wherein each two gear positions disposed in a shifting gate of one of an H- or multi-H-shifting gate (G1-G2; G3-G4; G5-G6; G7-RG) are associated in the transmission with two different coupling devices (22, 23, 24, 25, 31, 32), characterized in that, of said fixed wheels (11, 12, 13, 14, 33, 37) situated upon said input shaft (4), at least two fixed wheels (12 or 37, 13, 14) are in tooth contact with each two idler wheels (8, 15; 35, 36; 9, 16; 10, 17).

29. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein first idler wheels (16 or 36) of the highest gear (G6 or G7) and second idler wheels (15 or 16) of the second highest gear (G5 or G6) are situated upon said second countershaft (6) while third idler wheels (9 or 35) of the third highest gear (G4 or G5) and fourth idler wheels (8 or 9) of the fourth highest gear (G3 or G4) are supported on said first countershaft (5).

30. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein first idler wheel (17) for the second gear (G2) and second idler wheel (10) for the reverse gear (RG) are situated upon different countershafts (5, 6) and can be driven by a common fixed wheel (14).

31. (NEW) The six-gear vehicle transmission according to claim 28, wherein the gear wheels in the transmission, beginning from the clutch (K1), are disposed as follows: reverse gear (RG) and second gear (G2), fourth gear (G4) and sixth gear (G6), third gear (G3) and fifth gear (G5), the same as first gear (G1).

32. (NEW) The seven-gear vehicle transmission according to claim 28, wherein said gear wheels in the transmission, beginning from the clutch (K1), are disposed as follows: reverse gear (RG) and second gear (G2), fourth gear (G4) and sixth gear (G6), fifth gear (G5) and seventh gear (G7), the same as first gear (G1).

33. (NEW) The seven-gear vehicle transmission according to claim 28, wherein said countershafts (5, 6) are disposed either paraxially or forming an angle with said input shaft (4).

34. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein distances of said two countershafts (5, 6) from said input shaft (4) are different and that said output gear wheels (18, 19) upon said two countershafts (3, 4) form with said output toothing (20) on said differential transmission (21) reduction ratios of different magnitude.

35. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said output wheels (18, 19) are situated on the ends of said two countershafts (5, 6) pointing to said clutch (K1).

36. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said gearwheels of the third gear (G3) and of the fifth gear (G5) are different in the six-gear vehicle transmission (1) from those of the otherwise to a gear extent similarly built seven-gear vehicle transmission.

37. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein the fourth gear (G4) and the reverse gear (RG) with a common coupling device (23) are alternatively non-rotatably connectable with said first countershaft (5), the same as the second gear (G2) and the sixth gear (G6) with one other common coupling device (25) are alternatively non-rotatably connectable with said second countershaft (6).

38. (NEW) The six-gear vehicle transmission according to claim 28, wherein the first gear (G1) and the third gear (G3) with a common coupling device (22) are alternatively non-rotatably connectable with said first countershaft (5), the same as the fifth gear (G5) with one other coupling device (24) with said second countershaft (6).

39. (NEW) The six-gear vehicle transmission according to claim 28, wherein the first gear (G1) and the fifth gear (G5) with a common coupling device (31) are alternatively non-rotatably connectable with said first countershaft (5), the same as the

third gear (G3) and the seventh gear (G7) with one other common coupling device (32) with said second countershaft (6).

40. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said coupling devices (22, 23, 24, 25, 31, 32) are designed as one of a positive fit dog clutches or as shifting sets.

41. (NEW) The six-gear or seven-gear vehicle transmission according to claim 40, wherein each one of the coupling devices (22, 23, 24, 25, 31, 32) comprises one sliding sleeve axially movable upon the respective countershaft (5, 6) but non-rotatably connected therewith, the same as synchronizer rings disposed to one or more of the right and left thereof.

42. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said gear wheels (7, 17, 10) of one or more of a first gear (G1), of the second gear (G2) and of a reverse gear (RG) are situated in an area of front sides of a transmission housing.

43. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said gear wheels (7, 17, 10) of one or more of a first gear (G1), of a second gear (G2) and of a reverse gear (RG) are situated in a central area of the transmission.

44. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said clutch (K1) is designed as powershift clutch, preferably as one of a multi-disc clutch or as dry one-disc clutch.

45. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein one separate starting element, preferably a hydrodynamic torque converter, is situated according to driving technique between said drive shaft (2) of the prime mover and an input side of said clutch (K1).

46. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein one torsional vibration damper is located between said clutch (K1) and said drive shaft (2) of the prime mover.

47. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein one or more of said two countershafts (5, 6) and at least said input shaft (4) are connected with a non-wearing transmission brake (retarder).

48. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein on one or more of said two countershafts (5, 6) and on said input shaft (4) at least one other gear wheel is situated for driving auxiliary units.

49. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein with one or more of said countershafts (5, 6) and said input shaft (4) at least one electric generator can be driven.

50. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein one generator can be driven from the input side of said clutch (K1).

51. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said differential transmission (21) is designed as one of a power divider differential transmission or as length divider differential transmission.

52. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein a setting device for actuating said coupling devices can be actuated either manually or with servo assistance.

53. (NEW) The six-gear or seven-gear vehicle transmission according to claim 52, wherein said setting devices actuatable with servo assistance have piston-cylinder systems which can be actuated by one of a hydraulic or pneumatic pressure medium.

54. (NEW) The six-gear or seven-gear vehicle transmission according to claim 28, wherein said setting device actuatable by one or more of manually and with servo assistance comprises one mechanical conversion device (Fig. 3) which converts a selector lever movement in a shifting gate of an H- or multi-H shifting gate from one gear position to a next gear position (G1-G2; G3-G4; G5;G6; G7-RG) in actuation movements for two shifting sets (22, 23, 24, 25, 31, 32) in said transmission (1, 30).